

ARS60-F4A16384

ARS60

ABSOLUTE ENCODERS

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Sensor Intelligence.



Ordering information

Type	part no.
ARS60-F4A16384	1036677

Other models and accessories → www.sick.com/ARS60

Illustration may differ



Detailed technical data

Safety-related parameters

MTTF_D (mean time to dangerous failure)	300 years (EN ISO 13849-1) ¹⁾
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¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Performance

Number of steps per revolution (max. resolution)	16,384 (14 bit)
Measuring step	360° / number of steps
Measuring step deviation	0.005° binary number of steps
Error limits G	0.035° (binary number of steps) ¹⁾
Repeatability standard deviation σ_r	0.005° ²⁾

¹⁾ In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

²⁾ In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

Interfaces

Communication interface	Parallel data world
Initialization time	80 ms ¹⁾
Code type	Gray
Code sequence parameter adjustable	CW (clockwise) increasing when viewing the clockwise rotating shaft
Measured value backlash	0.005°
Response threshold	0.003°

¹⁾ Valid positional data can be read once this time has elapsed.

Electronics

Connection type	Male connector, M23, 21-pin, radial
Supply voltage	10 ... 32 V
Operating current	Typ. 90 mA

¹⁾ Only with shaft stationary (note initialisation time).

Switching level of control inputs	Logic H = $0.7 \times U_S$, Logic L = $0 \text{ V} \dots 0.3 \times U_S$
Actuation of set button	$\geq 100 \text{ ms}^{1)}$

¹⁾ Only with shaft stationary (note initialisation time).

Mechanics

Mechanical design	Solid shaft, face mount flange
Shaft diameter	10 mm
Shaft length	19 mm
Characteristics of the shaft	With flat
Weight	Approx. $0.3 \text{ kg}^{1)}$
Housing material	Aluminum die cast
Start up torque	Typ. 0.4 Ncm
Operating torque	Typ. 0.3 Ncm
Permissible shaft loading	20 N (radial) 10 N (axial)
Operating speed	$\leq 6,000 \text{ min}^{-1}$ with shaft seal $\leq 10,000 \text{ min}^{-1}$ without shaft seal ²⁾
Moment of inertia of the rotor	54 gcm^2
Bearing lifetime	3.6×10^9 revolutions
Angular acceleration	$\leq 500,000 \text{ rad/s}^2$

¹⁾ Based on devices with male connector.

²⁾ If the shaft seal has been removed by the customer.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 ¹⁾
Enclosure rating	IP65, male connector (IEC 60529) ²⁾
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	$-20 \text{ }^\circ\text{C} \dots +85 \text{ }^\circ\text{C}$
Storage temperature range	$-40 \text{ }^\circ\text{C} \dots +100 \text{ }^\circ\text{C}$, without package
Resistance to shocks	50 g , 11 ms (EN 60068-2-27)
Resistance to vibration	20 g , $10 \text{ Hz} \dots 2,000 \text{ Hz}$ (EN 60068-2-6)

¹⁾ EMC according to the standards quoted is achieved if shielded cables are used.

²⁾ With mating connector fitted.

Certificates

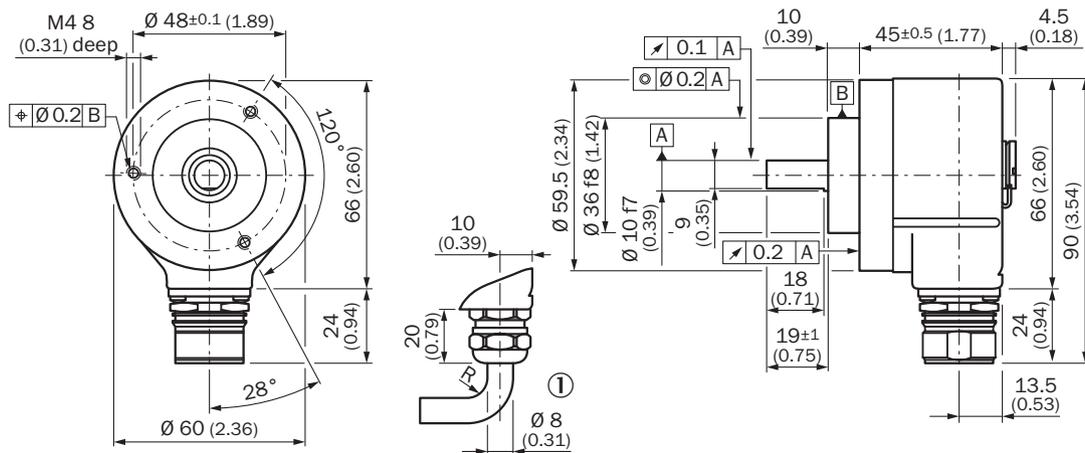
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

ECLASS 5.0	27270502
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ECLASS 5.1.4	27270502
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270502
ECLASS 8.0	27270502
ECLASS 8.1	27270502
ECLASS 9.0	27270502
ECLASS 10.0	27270502
ECLASS 11.0	27270502
ECLASS 12.0	27270502
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing

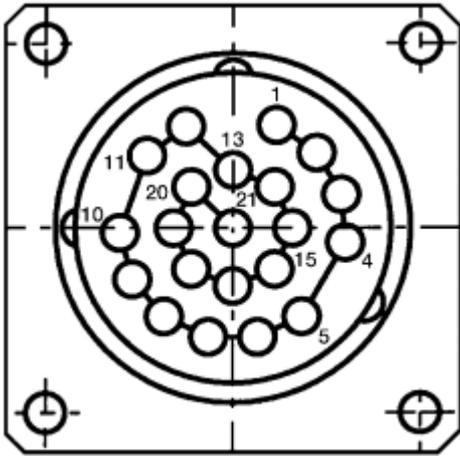


Dimensions in mm (inch)

General tolerances according to DIN ISO 2768-mk

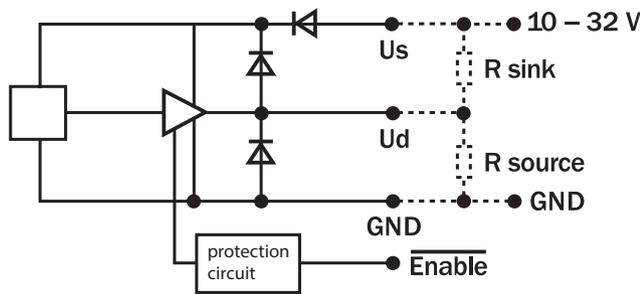
① R = min. bending radius 40 mm

Anschlussbelegung



PIN	Wire colors (cable connection)	SignalBinary	SignalGray	SignalBCD	
1	Violet	2 ⁰	G ⁰	2 ⁰ v. 10 ⁰	-
2	White/brown	2 ¹	G ¹	2 ¹ v. 10 ⁰	-
3	White/green	2 ²	G ²	2 ² v. 10 ⁰	-
4	White/yellow	2 ³	G ³	2 ³ v. 10 ⁰	-
5	White/grey	2 ⁴	G ⁴	2 ⁰ v. 10 ¹	-
6	White/pink	2 ⁵	G ⁵	2 ¹ v. 10 ¹	-
7	White/blue	2 ⁶	G ⁶	2 ² v. 10 ¹	-
8	White/red	2 ⁷	G ⁷	2 ³ v. 10 ¹	-
9	White/black	2 ⁸	G ⁸	2 ⁰ v. 10 ²	-
10	Brown/green	2 ⁹	G ⁹	2 ¹ v. 10 ²	-
11	Brown/yellow	2 ¹⁰	G ¹⁰	2 ² v. 10 ²	-
12	Brown/gray	2 ¹¹	G ¹¹	2 ³ v. 10 ²	-
13	Brown/pink	2 ¹²	G ¹²	2 ⁰ v. 10 ³	-
14	Brown/blue	2 ¹³	G ¹³	2 ¹ v. 10 ³	-
15	Brown/red	2 ¹⁴	G ¹⁴	2 ² v. 10 ³	-
16	Green	Parity		Parity	
17	Pink		Store		-
18	Yellow		Enable		-
19	Brown		CW/CCW (V/R)		-
*	Gray		SET		-
20	Blue		GND		-
21	Red		U _S		-

Diagrams



Recommended accessories

Other models and accessories → www.sick.com/ARS60

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: Parallel • Items supplied: By the meter • Cable: 22-wire, PUR, halogen-free • Description: Parallel, shielded 	LTG-2622-MW	6027532
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 21-pin, straight, A-coded • Signal type: SSI • Description: SSI, shielded • Connection systems: Crimp contacts 	DOS-2321-G	6027539
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 21-pin, straight • Connection type head B: Flying leads • Signal type: Parallel • Cable: 1.5 m, 22-wire, PUR, halogen-free • Description: Parallel, shielded • Application: Zones with oils and lubricants 	DOL-2321-G1M5PA4	2029218
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 21-pin, straight • Connection type head B: Flying leads • Signal type: Parallel • Cable: 3 m, 22-wire, PUR, halogen-free • Description: Parallel, shielded • Application: Zones with oils and lubricants 	DOL-2321-G03MPA4	2029219
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 21-pin, straight • Connection type head B: Flying leads • Signal type: Parallel • Cable: 5 m, 22-wire, PUR, halogen-free • Description: Parallel, shielded • Application: Zones with oils and lubricants 	DOL-2321-G05MPA4	2029220
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 21-pin, straight • Connection type head B: Flying leads • Signal type: Parallel • Cable: 10 m, 22-wire, PUR, halogen-free • Description: Parallel, shielded • Application: Zones with oils and lubricants 	DOL-2321-G10MPA4	2029221
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 21-pin, straight • Connection type head B: Flying leads • Signal type: Parallel • Cable: 20 m, 22-wire, PUR, halogen-free • Description: Parallel, shielded • Application: Zones with oils and lubricants 	DOL-2321-G20MPA4	2029222

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> • Description: Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange, aluminum, including 3 flat head screws M4 x 10 • Material: Aluminum • Details: Aluminum • Items supplied: Including 3 countersunk screws M3 x 10 	BEF-FA-036-050	2029160
	<ul style="list-style-type: none"> • Description: Flange adapter, adaptation of face mount flange with 36 mm centering hub to 60 mm square mounting plate, aluminum, including 3 flat head screws M4 x 8 • Material: Aluminum • Details: Aluminum • Items supplied: Including 3 countersunk screws M4 x 8 	BEF-FA-036-060REC	2029162
	<ul style="list-style-type: none"> • Description: Flange adapter, adaptation of face mount flange with 36 mm centering hub to 58 mm square mounting plate with shock absorbers, aluminum • Material: Aluminum • Details: Aluminum 	BEF-FA-036-060RSA	2029163
	<ul style="list-style-type: none"> • Description: Flange adapter, adaptation of face mount flange with 36 mm centering hub to 100 mm servo flange with 60 mm centering hub, aluminum • Material: Aluminum • Details: Aluminum 	BEF-FA-036-100	2029161
	<ul style="list-style-type: none"> • Description: Mounting bracket for encoder with spigot 36 mm for face mount flange • Items supplied: Mounting kit included 	BEF-WF-36	2029164

	Brief description	Type	part no.
shaft adaptation			
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30°C to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub 	KUP-0610-B	5312982
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial ± 0.3 mm, axial ± 0.4 mm, angular $\pm 2.5^\circ$; max. speed 12,000 rpm, -10° to $+80^\circ\text{C}$, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin 	KUP-0610-F	5312985
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 10 mm / 10 mm; maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. revolutions 10,000 rpm, -30° to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum clamping hubs 	KUP-1010-B	5312983
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial ± 0.3 mm, axial ± 0.4 mm, angle $\pm 2.5^\circ$, torsion spring stiffness 30 Nm/rad; material: aluminum flange, glass-fiber reinforced polyamide membrane and hardened steel coupling pin 	KUP-1010-F	5312986
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: 10 mm / 12 mm; maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. revolutions 10,000 rpm, -30° to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum clamping hubs 	KUP-1012-B	5312984

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

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